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EXAMINER	
PENDLETON, DIONNE	

ART UNIT	PAPER NUMBER
2627	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptomail@smiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/565,195	PARK ET AL.	
	Examiner	Art Unit	
	DIONNE H. PENDLETON	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 1-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Izumi (US 6,778,475).**

Regarding claims 1 and 13,

Izumi teaches a photo detector for, when light emitted from a two-wavelength light source is divided into at least three light components to be reflected by an optical recording medium, detecting the reflected light components, the photo detector comprising:

a first detector **("210"-"212" in figure 9)** divided into eight sections (see sections "a"-"h") detecting the at least three light components reflected by the optical recording medium to convert the light components into a first set of electrical signals;

a first calculating portion ***(see components which provide an input to adder "75" in figure 9)*** calculating a first tracking error signal from the first set of electrical signals converted by the first detector by a differential push-pull method **(see column**

15, lines 44-47 and column 16, lines 51-58 for discussion of TE signal for DVD using DPP method);

a second calculating portion ***(the examiner has interpreted parts "52", "53", "54" and "77" in figure 9, as corresponding at least in part to the "second calculating portion")*** calculating a first focusing error signal by an astigmatism method **(*see components which provide an input to adder "72" in figure 9*)** and calculating a second tracking error signal by a differential phase detection method from the first set of electrical signals converted by the first detector **(see output of DPD circuit "77", column 15, lines 48-53 and column 17, lines 40-5144-47 for discussion of TE signal for DVD-ROM using DPD method);**

a second detector **("410"-"412" in figure 9)** divided into four sections detecting the at least three light components reflected by the optical recording medium to convert the at least three light components into a second set of electrical signals;

and a third calculating portion ***(the examiner has interpreted parts "88"-"99" in figure 9, as corresponding at least in part to the "third calculating portion")*** calculating a second focusing error signal by the astigmatism method ***(see FE signal for a CD, in figure 9)*** and calculating a third tracking error signal from the second set of electrical signals converted by the second detector ***(see TE signal for a CD, in figure 9).***

Izumi fails to expressly teach that the third tracking error signal is calculated by a differential phase detection method. However, ***column 15, lines 48-53*** of the Izumi

reference discloses that the differential phase detection (DPD) method is well know in the art for calculating tracking error. Additionally, ***column 13, lines 30-33*** teach that the tracking error signal may be detected from a push-pull method OR from a DPD method. It therefore would have been obvious for one of ordinary skill in the art at the time of the invention to substitute a DPD circuit for the push-pull circuit, as suggested by column 13, lines 30-33 of Izumi, for detecting a tracking error signal from a CD. Or alternatively, it would have been obvious for one of ordinary skill in the art at the time of the invention to supplement the CD - push-pull tracking error detection circuit with a DPD circuit, for the purpose of detecting a tracking error signal when a CD-ROM type storage medium is being used.

Regarding claim 2,

Izumi teaches a photo detector according to claim 1, wherein the first detector (210-212) comprises:

a first central sensor (" 210") having a region divided vertically and horizontally into four sub regions detecting a central light component among the at least three light components reflected by the optical recording medium to convert the central light component into the first set of electrical signals;

a first peripheral sensor (211) having a region divided vertically or horizontally into two sub regions (any two of "e-h"- "f-g") detecting a first peripheral light component among the at least three light components reflected by the optical recording medium to convert the first peripheral light component into the first set of electrical signals;

and a second peripheral sensor (212) having a region divided vertically or horizontally into two sub regions (any two of "i-l" – "j-k") detecting a second peripheral light component among the at least three light components detected by the optical recording medium to convert the second peripheral light component into the first set of electrical signals (see Figure 2, which teaches at least 2 regions in the second peripheral sensor).

Regarding claim 3,

Izumi teaches the photo detector according to claim 1, wherein the optical recording medium is one among a DVD-R, a DVD+RW, a DVD-RW, and a CD (see "1" or "10" in figures 2A and 2B).

Regarding claim 4,

Izumi teaches a switching portion (79) selectively outputting either the first tracking error signal or the second tracking error signal in accordance with a type of optical recording medium (column 16:30-35).

Regarding claim 5,

Izumi teaches that the switching portion (79) selectively outputs the first tracking error signal calculated by the first calculating portion when the optical recording medium is one among the DVD-R, the DVD+RW, and the DVD-RW, and wherein the switching portion selectively outputs the second tracking error signal calculated by the second

calculating portion when the optical recording medium is the DVD ROM (column 16:30-62 and column 17:40-53).

Regarding claim 6,

Izumi teaches the photo detector according to claim 3, wherein the third calculating portion calculates the second focusing error signal and the third tracking error signal when the optical recording medium is the CD (see column 15:34-53 and column 16, line 51 through column 17, line 53).

Regarding claim 7,

Izumi teaches the photo detector according to claim 1, wherein the first detector is a DVD sensor and the second detector is a CD sensor (column 20:34-40 teaches that detector (210-212) is for DVD use and detector (410-412) is for CD use).

Regarding claim 8,

Figure 10 of Izumi teaches the photo detector according to claim 7, wherein the DVD sensor includes a first central sensor (210) and first and second peripheral sensors (211,212).

Regarding claim 9,

Izumi teaches the photo detector according to claim 8, wherein the first central sensor is divided into four regions and the first and second peripheral sensors are each divided into two regions (figure 10 illustrates central sensor 210 having four regions,

while peripheral sensors 211,212, have a minimum of two regions, thereby meeting the limitations of the Applicant's claim).

Regarding claim 10,

Izumi teaches the photo detector according to claim 9, wherein a 0 order beam is incident on the first central sensor, a +1 order beam is incident on the first peripheral sensor and a -1 order beam is incident on the second peripheral sensor (column 18, lines 2-7).

Regarding claim 11,

Izumi teaches the photo detector according to claim 7, wherein the DVD sensor generates the first tracking error signal using the differential push-pull method when the optical recording medium is a DVD-R or a DVD.+-.RW and the DVD sensor generates the second tracking error signal using the differential phase detection method when the optical recording medium is a DVD-ROM (column 17, lines 40-51).

Regarding claim 12,

Izumi teaches that the first tracking error signal is used for tracking a servo of an optical pick-up when the recording medium is a DVD-R or a DVD+-RW (column 23:31-27 teaches detecting tracking error for DVD-R type disks).

Regarding claim 14,

Izumi teaches the photo detector according to claim 13, wherein the first detector is divided into eight detecting regions (210-212 in figure 9, see (a-h) and the second detector is divided into four detecting regions (see "310" (m-p), or see "410"-"412" in figure 10).

Regarding claim 15,

Izumi teaches the photo detector according to claim 13, wherein the first detector is a DVD sensor and the second detector is a CD sensor (column 20:34-40 teaches that detector (210-212) is for DVD use and detector (410-412) is for CD use).

Regarding claim 16,

Izumi teaches the photo detector according to claim 15, wherein the DVD sensor includes a first central sensor ("210" in figure 9) and first and second peripheral sensors (211,212).

Regarding claim 17,

Izumi teaches the photo detector according to claim 16, wherein the first central sensor is divided into four regions and the first and second peripheral sensors are each divided into two regions (figure 10 illustrates central sensor 210 having four regions, while peripheral sensors 211,212, have a minimum of two regions, thereby meeting the Applicant's claim).

Regarding claim 18,

Izumi teaches a photo detector comprising:

a first detector (the combination of “210”, “211”and “212” in figure 9) detecting light components reflected from an optical recording medium and a beam splitter ("3” in fig. 2A, 2B) and converting the reflected light components into a first set of electrical signals;

and a second detector (the combination of “410”, “411”and “412” in figure 9) detecting the light components reflected from the optical recording medium and the beam splitter (3) and converting the reflected light components into a second set of electrical signals.

Figures 10 and 11 illustrate that the detectors are separated by a predetermined distance (column 17, line 60). Though Izumi fails to expressly teach that the predetermined distance is in consideration of the beam splitter’s thickness, it would have been obvious to calculate said predetermined distance in consideration of the thickness of the beam splitter, as well as in consideration of other characteristics of the optical system, since said beam splitter is on the transmission path between the optical storage medium and the detection plane, and any beam influencing characteristics of the beam splitter must be taken into consideration for the purpose of positioning the detecting elements so as to receive the light spots transmitted from the beam splitter.

Regarding claim 19,

Izumi teaches the photo detector according to claim 18, wherein the first detector is divided into eight detecting regions (210-212 in figure 9, see (a-h) and the second detector is divided into four detecting regions (see “310” (m-p), or see “410”-“412” in figure 10).

Regarding claim 20,

Izumi teaches the photo detector according to claim 18, wherein the first detector (“210”-“212” in figure 9) includes a first central sensor (210) and first (211) and second (212) peripheral sensors and the second detector (“410”-“412” in figure 10) includes a second central sensor (410).

Response to Arguments

2. Applicant's arguments with respect to claims 1-17 rejected in the Official Action mailed 8/10/2009 have been considered but are not persuasive.

3. ***Regarding Applicant’s Argument That The Official Action Relies On The Same Tracking Error Signal For Teachings A First Tracking Error Signal And For Teaching A Second Tracking Error Signal:***

The Examiner respectfully disagrees with the Applicant. Column 16, lines 51-62 discloses use of switch "79" for outputting a TE signal using DPP method, while column 17, lines 40-51 discloses the use of switch "79" for selectively outputting a TE signal via DPD method. The first tracking error signal of the applicant's claim corresponds to Izumi’s TE signal via DPP method, while the second tracking error signal of the

applicant's claim corresponds to Izumi's TE signal via DPD. Therefore, the office action does not rely on the same tracking error signal for teaching the first and the second tracking error signal of the Applicant's claim.

4. ***Regarding Applicant's Argument That The Output Of Circuit "77" Does Not Refer To A Second Tracking Error Signal, But Refers To The First Tracking Error Signal Only:***

The Applicant's argument is not persuasive. The output of switch "79" functions to output one of two TE signals. A first of the two TE signals being the TE push pull signal for a DVD type disc. The second of the two signals being the TE DPD signal for use with a DVD-ROM type disc. Therefore, Izumi teaches a first calculating portion for yielding a first tracking error signal, *as well as* a second calculating portion for yielding a second tracking error signal.

5. ***Regarding Applicant's Argument That Izumi Fails To Teach A First Detector Divided Into Eight Sections and A Second Detector Divided Into Four Sections:***

The Examiner is not persuaded by the Applicant's argument since the twelve parts of the first detector of Izumi, include the minimum eight parts required by the Applicant's claims. The Applicant has failed to utilize language which would limit the first detector of the Applicant's invention to having only eight parts, and no more. Likewise, the eight parts of the second detector of Izumi, include the minimum four parts required by the Applicant's claims. Again, The Applicant has failed to utilize language which would limit the second detector of the Applicant's invention to having only four

parts, and no more. Therefore, a detector of Izumi, which comprises *at least* four parts, is found to fairly anticipate the second detector of the Applicant's claim.

6. ***Regarding Applicant's Argument That Izumi Makes No Reference Or Suggestion That The Detectors Are Separated By A Predetermined Distance:***

The Applicant's argument is not persuasive. The detectors of Izumi are inherently positioned at predetermined locations and distances, one-from-the-others, so as to be optimally disposed at locations at which the beam spots will make contact with the detector surface(s).

7. ***Regarding Applicant's Argument That The Examiner Provides No Support For The Statement That Detectors Must Be Separated By A Predetermined Distance Proportional To The Thickness Of The Beam Splitting Element:***

The light spot of the light which is reflected from the beam splitting element is expanded or contracted in the direction of optical axis and in a vertical direction as a function of astigmatism which is produced in the reflected light depending on the thickness of the beam-splitting element, as well as the incident positions of light upon the beam splitting element. Since the effects of the thickness of a beam splitting element would be well known and understood by one of ordinary skill in the art, the Examiner's statement of obviousness in the official action mailed 8/10/2009 is held as sufficient and is maintained. However, since the Applicant suggests that the Examiner's motivation for separating detectors by a predetermined distance in proportion to the thickness of the beam splitter, has been taken from the Applicant's own specification,

the Examiner has provided below, a prior art reference in supports the Examiner's position.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Kawasaki (US 4,767,921), see column 3, lines 12-55.**

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIONNE H. PENDLETON whose telephone number is (571)272-7497. The examiner can normally be reached on 10:30-7:00 M-F.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dionne H Pendleton/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627